REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 074-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	22 January 2002	Symposium Paper 26-27 February 2002

4. TITLE AND SUBTITLE
Network Centric Operations: The Enterprise Battle Group Experience

5. FUNDING NUMBERS

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8. PERFORMING ORGANIZATION REPORT NUMBER
N/A

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Naval Surface Warfare Center Dahlgren Division
17320 Dahlgren Road
Code N10
Dahlgren VA 22448-5100

10. SPONSORING / MONITORING AGENCY REPORT NUMBER
N/A

11. SUPPLEMENTARY NOTES
Prepared for the Engineering the Total Ship (ETS) 2002 Symposium held in Gaithersburg, Md. at the National Institute of Standards & Technology and sponsored by the Naval Surface Warfare Center & the American Society of Naval Engineers

12a. DISTRIBUTION / AVAILABILITY STATEMENT
Distribution Statement A:
Approved for public release: Distribution is unlimited

12b. DISTRIBUTION CODE
A

13. ABSTRACT ***(Maximum 200 Words)***

With increased information flow and rapidly paced military operations, decision makers find it difficult to maintain full situational awareness, resulting in ineffective decision-making in stressful and time-constrained environments. How does one manage increased information loads in a shorter time without negatively impacting decision-makers? Due to the competitive nature of warfare and a commander's desire to gain a military advantage over an enemy, military operations can become fast paced. In terms of Boyd's OODA (Observe, Orient, Decide Act) Loop, when a dynamic OODA Loop process is combined with real-time, high volume, networked information systems currently accessible on ships, the naval decision maker/operator can now better respond to the action and seize the initiative in battle. The Information Technology (IT) revolution has made sailors accessible to e-mail, electronic documents, Internet web-pages, chatrooms, and video teleconferencing. However, unconstrained/uncontrolled use of information resources can quickly overwhelm operators and cause information overload.

The Navy's doctrine on Network Centric Operations exploits the advances in IT-21 systems in order to improve the OODA loop process, determine the enemy's vulnerabilities, and finally achieve the desired end-state. Network Centric Operations focus combative power from the network rather than individual platforms. IT and Network Centric

14. SUBJECT TERMS
Carrier Battle Groups; operators and systems; deployment

15. NUMBER OF PAGES
12

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UL

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18

Network Centric Operations: The Enterprise Battle Group Experience

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ABSTRACT

With increased information flow and rapidly paced military operations, decision-makers may find it difficult to maintain full situational awareness, resulting in ineffective decision-making in stressful and time-constrained environments. How does one manage increased information loads in a shorter time without negatively impacting operations? In terms of Boyd's OODA (Observe, Orient, Decide Act) Loop, when a dynamic and adaptable OODA Loop process is combined with real-time, high volume, networked information systems currently accessible on ships, the decision-maker is better able to respond to the enemy's actions and seize the initiative in battle. The Information Technology (IT) revolution has made sailors accessible to e-mail, electronic documents, Internet web-pages, chatrooms, and video teleconferencing. However, unconstrained and uncontrolled use of information resources may quickly overwhelm operators and cause information overload.

The Navy's doctrine on Network Centric Operations exploits the advances in IT-21 systems in order to improve the OODA loop process, determine the enemy's vulnerabilities, and finally achieve the desired end-state. Network Centric Operations use networks to combine the combative power of military units that are separated by distance. Thus, operations are centered on the network vice the individual platforms. IT and Network Centric innovations that were demonstrated during Enterprise Battle Group's (ENTBATGRU) 2002 Deployment will be discussed.

INTRODUCTION

The recent proliferation of information systems on U.S. Navy ships has caused some operators to become concerned about information overload. Now more information than ever can be collected and processed. Fast paced operations require the ability to quickly convert information into a useful form to assist in decision-making. As a result, it is important to always link information to the decision making process. Only pertinent information and information that increases the knowledge base need be processed. All other information may remain unprocessed or discarded.

To understand this relationship and how it applies to military operations, one needs to become familiar with military strategy and tactics. Much has been written on the art and science of warfare. All naval officers receive an introduction to this subject. It is with this knowledge and perspective that our naval decision-maker, who in all likelihood will be onboard a ship, will use to effectively fight and stay alive. "Don't give up the ship" is a phrase long associated with naval warfare. It is just a pertinent today as when it during John Paul Jones' day.

Strategy and tactics are also deeply rooted in the human behavioral aspect of warfare. Human decision-making and survival instincts introduce a level of complexity and uncertainty that is difficult to accurately model. Successful decision-makers also understand how operators interact with a weapon system in order to effectively employ it. This interaction usually requires relevant, accurate, and timely information (Alberts 1999). These issues drive the demand for improved information systems and cause the operator to seek situations that improve his information posture.

This information model can be applied to the organization of a Carrier Battle Group. The Carrier Battle Group has its origins in World War II. It consisted of a group of ships with specific warfighting roles that was self-sufficient. Its mission was to seek out other large groups of ships and destroy them. The Carrier Battle Group

could provide its own air, surface, and undersea area defense and serve as a self-contained fighting force. In the 21st century, Carrier Battle Groups have become more multi-functional and thus provide a more flexible response to a crisis situation. Increased connectivity with shore based and international forces had increased their interoperability in joint (multi-service) and coalition (international) operations.

The experience of the Enterprise Battle Group in 1999 (Dawson 1999) and 2001 will be explored and discussed. The incorporation of Information Technology (IT) under real world conditions is highlighted in these experiences. The trends illustrate the need for direct fleet input to help determine the future growth of IT systems as they are applied to support Carrier Battle Group operations, especially in the role of network centric operations.

STRATEGY AND TACTICS 101

The ability to make decisive tactical and strategic decisions in a time critical and chaotic environment has always been a critical skill for success in warfare. Carl von Clausewitz, the 19th century Prussian military strategist, described war as "an act of violence intended to compel our opponent to fulfill our will" (Clausewitz 1968). Warfare is therefore a violent competition between two intelligent and emotional entities. Each side tries to gain an advantage over the other through offensive, maneuver, deception, and concentration of force. As a result, battles consist of a repeating cycle of seizing the initiative, providing defense against counterattack, and seizing the initiative once again. The contender who can skillfully compete in this process (i.e. reduce the enemy's strength in each cycle to the point where the enemy submits to your will or is annihilated) will win and achieve military victory. This model of warfare is very similar to naval battles in that one side initiates combat action (i.e. fires first), the other side upon detecting the incoming salvo defends against it and tries to launch a salvo in return. This process is repeated until one side sinks or cannot continue to return fire.

Knowledge and understanding of the enemy's intent has always provided a key advantage in battle. Sun Tzu is famously quoted with stating:

"if you know others and know yourself, you will not be imperiled in a hundred battles; if you do not know others but know yourself, you win one and lose one; if you do not know others and do not know yourself, you will be imperiled in every battle." (Sun Tzu 1991)

Information, knowledge, and critical thought provide the tools to understanding oneself and the enemy's abilities and limitations. Looking at the world through the enemy's eyes provides insights into how the enemy will react and move against your forces. This insight can only be deduced and usually cannot be found on any particular bit of information. It is a derived and evolving picture.

Combat decision-making can be described by Boyd's OODA (Observe, Orient. Decide Act) Loop. This simple, yet highly effective decision-making tool is well suited for military operations. It was developed by John Boyd, an Air Force fighter pilot, in the 1960's and has since been adapted by the U.S. Marine Corps as the decision-making tool of choice for the basic rifleman. In many ways, the "Battle Rhythm" associated with Battle Group staffs and other operational sea borne commands exhibits the same qualities. Information is observed and reported, focus and attention is orientated toward the perceived threat or objective, decisions are made based on received information, and action is taken that will result is moving closer to the desired end state. This process is repeated again until the end state is reached. (Fig. 1)

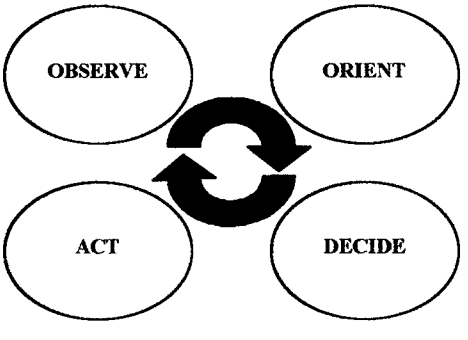

Figure 1 The OODA Loop

The OODA Loop cycle time can be sped up or decreased depending on the situation and the perceived or actual timing of the enemy's OODA Loop. The one with the faster OODA Loop will be able to respond and take action (i.e. initiative) quicker than their opponent, not allowing him to ever seize the initiative. Battles are won through initiative.

General Strategy

Sun Tzu (Chinese strategist 2nd Century B.C.) advocated that for success in battle one must 1) know his enemy as well as himself, 2) defeat the enemy's plan rather than use brute force, 3) and use information, the environment, and the enemy's perceptions to gain an advantage. Ideally, Sun Tzu believed that a smart opponent could defeat an enemy without ever fighting. Making an enemy to feel defeated is all that is required.

During the Napoleonic Wars, Jomini (Swiss Officer fighting for the French) and Clausewitz, formulated principles of warfare and attempted to describe this phenomenon. Jomini's principles of warfare are objective, offensive, mass, and maneuver. He theorized that the most critical aspect of tactics is defining and clearly stating the objective. Without a clear objective, one cannot focus their efforts and will have little possibility of achieving their goals. War is also won by taking the offensive. The side that drives the offensive also drives the initiative. However, in order to overpower an enemy and achieve a successful offensive, one must apply massive force against the enemy's weakest point. Finally, maneuver is used to take advantage of the terrain and location of the enemy's forces during the attack. Successful maneuver allows one to surprise the enemy at the critical moment, facilitating the application of massive force (Jomini, 1987). Of course, following the rules is not enough. One must know how and when to apply the rules. This is called generalship.

Clausewitz, on the other hand, focused on understanding war and finding ways to conceptualize it. He introduced such concepts as center of gravity, the fog of war, friction, and the relationship between politics and military action.

An enemy's center of gravity is the source of their strength. If the center of gravity is successfully attacked through a critical vulnerability, an enemy will be severely weakened and lose the will to resist. It is therefore the goal in warfare to break the enemy's will so that they will give in to your demands. This is achieved by decisively engaging their military, occupying the country, or by more devastating measures aimed at breaking the will to resist.

The fog of war is the inability to see or know all things during a battle. Despite the greatest of efforts, the fog will always persist because it is based on uncertainty and unpredictability that is inherent in warfare. Modern communications and surveillance provides tools that lift the "fog", but one only sees or hears what the enemy allows. Friction is a phenomenon not unlike the friction in physics. It is always present and continually depletes energy from an operation, organization, or endeavor. Although its impact may be reduced, it can never be eliminated. Friction can take the form of organizational inertia, unexpected planning difficulties, and the inability to seize the initiative (Clausewitz 1968).

Clausewitz also theorized that governments, the people, and the military have a very special relationship with regards to war. Governments generally try to shape the international environment to suit their national interests. They might use diplomacy, alliances, economic aid, or military force to achieve their goals. Military action is therefore an extension of policy by other means. In order to obtain a clearer understanding of this relationship, Clausewitz describes the philosophical concepts of emotion, reason, and chance in terms of a Trinity consisting of three physical entities. His Trinity associates emotion with People, reason with Government, and chance with the Military. Balancing the three legs of the Trinity (People, Government, and Military) is essential for ensuring that the nature of military action selected is compatible with political objectives and public opinion. For example, an unbalanced Trinity was created during the

Vietnam War due to the lack of public support for the war as it prolonged. During the Persian Gulf War the Trinity was reasonably balanced because military action, political objectives, and public opinion were compatible and consistent.

With regards to the communication and execution of orders, Clausewitz and Jomini relied upon the transmission and understanding of Commander's Intent. Commander Intent is the Commander's plan, vision, and mission statement. It provides subordinate commanders with a sense of the Commander's thought process, sense of priority, and outlook. When subordinates have a well-developed sense of Commander's Intent, they can achieve the mission with less communications and less direction from above. Commander's Intent is a critical feature for the coordination of dispersed forces in battle. If properly communicated, it can serve as a force multiplier. However, if improperly communicated, it can lead to poorly executed actions and lack any sense of control. Commander's Intent must be built up over time and become part of the group's socialization and teambuilding process before combat.

In conclusion, these points on strategy are part of U.S. Navy and Marine Corps military doctrine. They form the basis of our concept of warfighting and provide a framework from which to plan, organize, and execute naval operations. Figure 2 highlights the military principles and their association with their respective military strategist.

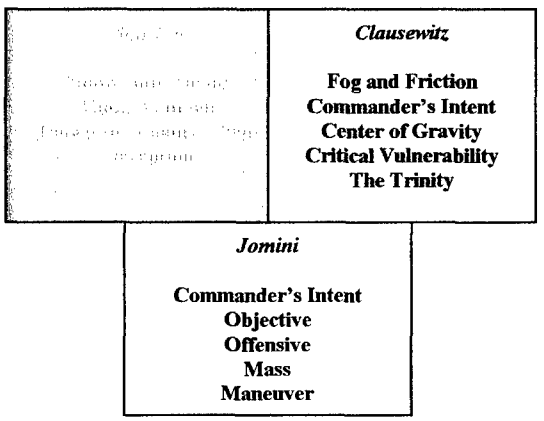

Figure 2 Summary of Principles from Sun Tzu, Clausewitz, and Jomini

Maritime Strategy

Maritime strategists such as Alfred Thayer Mahan and Sir Julian Corbett applied the principles of Jomini and Clausewitz to naval warfare in the late 19th and early 20th century. Their ideas helped us view the maritime environment as a place to engage an enemy's fleet in a large decisive battle as well as a place from which to influence the overall conduct of the war. Mahan adopts a Jominian approach to naval warfare while Corbett adapts a Clauswitzian approach. Mahan views the destruction of the enemy's fleet through a large naval engagement as the ultimate goal in naval warfare. Corbett views naval warfare as an extension of the land campaign where its conduct is also tied to political objectives of the war.

In maritime strategy, choke points such as the Straits of Gibraltar, the Straits of Malacca, the Suez Canal, and the Panama Canal are viewed as strategic regions. Control of these regions allows one to control the flow of merchant shipping, enabling them to deny an enemy overseas trade. Control of the seas also allows one to land amphibious forces ashore at strategic locations, confounding the enemy's defensive plans (Jablonsky 1999). Mahan's theories were the basis for U.S. naval planning before World War II and for achieving naval dominance over the Soviet Union during the Cold War. Corbett's theories were the basis of the American island hopping campaign in the Pacific against the Japanese. The ultimate goal was to gain land bases that could conduct air strikes against Japan and serve as an invasion support base. After the Cold War, U.S. maritime strategy changed in favor of Corbett's theories to form the current U.S. Maritime Strategy of "Forward, From the Sea" and the U.S. Marine Corps strategy "Operational Maneuver from the Sea".

Joint Strategy

Joint strategy is the application of military force using all air, land, and sea components. With regards to the United States, joint military strategy is described in the U.S. National Military Strategy and is produced by the Joint Chiefs of Staff. This document is based on the National

Security Strategy produced by the President. This relationship shows the tie between political and foreign policy objectives and the role of the military strategy to support it.

A futuristic vision of U.S. military strategy is presented in Joint Vision 2010 and Joint Vision 2020. These doctrinal publications present a vision of how the U.S. Military must operate in the future, following the principles of Dominant Maneuver, Precision Strike, Focused Logistics, and Battlespace Dominance. All operations in the future will be Joint (i.e. multi-service) and Interagency (i.e. multi-Department – State, DoD, Justice, Commerce, etc.). The current operation Enduring Freedom is using resources from all areas of the government.

The U.S. naval forces must therefore be able to be integrated into a Joint operating environment. Being at sea no longer limits participation or connectivity in Joint Operations. In this new era of Network Centrism, the network is now the "glue" that holds together the force, not the platform. Decision-making, depending on the situation, might be afforded better protection at sea because of the watery barrier that separates ships from land. Ships are secure and self-sufficient entities that are now more capable because they can be networked to a larger force, allowing ideas, knowledge, sensors, and weapons to be shared (Alberts, 1999).

The OODA Loop Decision Making Process

The OODA Loop is a simple process, but requires much information that is relevant, accurate, and timely for it to be used successfully. One must know their operating environment and know how to exploit it to gain an advantage. They must also have a keen understanding of their capabilities and that of their enemy's (Sun Tzu – Know Your Enemy and Yourself).

During the Observation Phase, information is acquired and placed into a form that is useful. This might mean that information is gathered from message traffic, web-pages, directly from sensors (radar, sonar, visual, etc), and from voice communications. The information is then plotted, displayed, and processed so that it can be more easily understood and accessed. From these displays, the analysis of the information begins.

During the Orient phase, the analysis of the information begins to form a picture of the situation at hand. The force begins to orient itself to deal with the situation. This may require organizing and communicating with other force units that they may be best situated to deal with the perceived threat. During this phase, knowledge of the objective and Commander's Intent is important. It will be used to determine how to orient the force and begin the process of determining response options.

During the Decision Phase, the decision-maker must decide upon a course of action, again based upon the objective and Commander's Intent. An option is selected from several that were generated during the Orient Phase. The decision reached should be based upon the most recent information available, advice from subordinates, and an accurate picture of the situation at hand. It is during this phase that the "fog of war" is encountered. There never is enough information to decide upon the best solution for any given circumstance. As with most things, one must exercise judgment and intuition during the decision-making process.

During the Action Phase, the selected course of action must be communicated to the units involved so that it can be executed. It is during this process that "friction" is encountered in warfare. Friction causes easy tasks to become difficult and to bog down during time critical situations. Thus, once an action is selected, implementing the process to execute it may not be a trivial task. Many elements must come together for words to be turned into action.

Once the OODA Loop cycle has been completed, it is repeated over again. The time required to complete the cycle may vary, dependent on situation, information available, and enemy actions. OODA Loops are usually managed with knowledge or at least awareness of the enemy's OODA Loop. The two OODA loops thus compete against each other and try to operate "within" each other's OODA Loop. If the goal in combat is to confuse and surprise the enemy, one

must have an OODA Loop that operates faster than the enemy's or performs in an unpredictable manner. OODA Loop cycle times vary based on the perceived threat and the objective. Generally, much effort and training must be expended to them make faster, a feat that is usually not sustainable for long time periods.

OODA Loops by design are also adaptive in nature and will operate based on the survival instincts of the organization. As the hunter can easily become the hunted, one's OODA Loop could easily become targeted and overwhelmed by an enemy. Predictability is generally the path by which an enemy can target an OODA Loop. Once targeted, an enemy can feed the OODA Loop false information, and eventually defeat it.

The OODA Loop model allows one with some basic military education to grasp the significance of tactical decision-making and therefore the decision-making inherent in Carrier Battle Group operations. The requirement to seize the initiative, attack an enemy's critical vulnerabilities, topple their center of gravity, and force the enemy to resist fighting is the basis of warfare and also of Battle Group Operations. The operations may be more complex and convoluted, but the principles remain the same: 1) Drive the problem, 2) Anticipate change, 3) Remain flexible, and 4) Try to operate within the opponent's OODA Loop.

Commander's Intent allows groups of OODA Loops to work together in a synchronized fashion, whether it is in a centralized or decentralized manner. One may think of a Carrier Battle Group as consisting of numerous OODA Loops representing the Warfare Commanders and ship Commanding Officers that make up the organization. The best operational results are achieved when these OODA Loops are synchronized, follow the Battle Group Commander's Intent (generally based on Commander's Intent of higher authority), and remain adaptable and flexible.

NETWORK CENTRIC OPERATIONS AND WARFARE

Network Centric Operations are based on the idea of using communication networks to supply the "glue" that holds together a dispersed military force (Alberts, 1999). Prior to network centrism, ships were platform centric. Their effectiveness was due to a platform's weapons, structural strength, and crew training. As ships began to operate in groups, communication methods were developed that could allow the group to coordinate their actions, allowing them to gain an advantage over the enemy. This was first done with lights and signal flags. During Lord Nelson time, the Royal Navy went to great lengths to perfect the use of codebooks, allowing for more efficient use of signal flags (Keegan, 1989). Codebooks resulted in data compression (flags or groups of flags represented whole statements) as well as an increase in transmission speed (fewer flags to handle take less time). Message receipt was a function of training in codebook usage, having the correct codebook, and the crew's ability to recognize and accurately read the flags. In any case, ships were required to be within sight of one another in order to communicate.

As shipboard technology supported wireless communications at the beginning of the 20th century, ships could for the first time be outside of visual range to communicate. Communications over great distances occurred at the speed of light. Ships at sea were now as connected with regards to communications as land based units, with the exception of a voice telephone system. As radio technology improved, shipboard wireless telephony systems were used at sea to communicate orders and provide operational status. Radio nets had their own protocols in order to maintain radio discipline and keep communications concise and flowing.

Shipboard electronic sensors also became feasible at sea with the invention of radar in the 1930s. With the introduction of radar and radio communications, shipboard command centers known as Combat Information Centers (CIC) evolved and served as a place where information fusion occurred, information and status was

displayed, and orders were acknowledged and disseminated in support of the tactical decision-making process.

As digital computers evolved and reduced in size in the 1950s and early 1960s, they were installed onboard ships in order to process information and automatically display status, thereby speeding up the OODA Loop process. Wireless tactical data nets such as the Navy Tactical Data System (NTDS) were established so that ships could see contacts on their displays that were not visible to their own sensors. NTDS established a Common Operating Picture (COP) among its users (Friedman, 2001).

As satellite communications became more prevalent in naval operations, the increased reach and information content allowed communications between at sea and shore based units to improve. These improvements came in the form of multiple voice channels, video, high bandwidth data links, and high-speed Internet access. All of these systems are now available in some form with IT-21 upgrades. As a result, ships not IT-21 capable are unable to participate in the network and are restricted to sharing information via slower communication forms such as voice and message traffic. The IT-21 improvements have brought the capabilities of the modern office to ships at sea. Not office is complete without a telephone, networked computer, fax machine, and Internet/E-mail access. Video teleconferencing is also available on all aircraft carriers and large deck amphibious ships. Cruisers are planned to be included in this group, but in limited numbers and at lower bandwidths.

As a result of the evolution of network centrism, groups of ships can better perform their mission as a cohesive unit. Via networking, platform capabilities, individual talent, and computational power can be shared by all members of the group. Outreach into the Internet through SIPRNET allows anyone to gather information and process it. Weapons and sensors are not required to be co-located. Weapons can receive fire control information from other platforms as described in the CEC (Cooperative Engagement Concept) or be updated in flight by an observer closer to the target. The power of the network breaks down the barrier of the platform and readily integrates the necessary units to create a force tailored for a specific mission. As the mission changes, more players may be added or deleted.

Network Centric Operations is broadly described by the U.S. naval doctrine as:

"...the art of deriving maximum force power through the rapid and robust networking of diverse, well-informed, and geographically dispersed warfighters. Effective Network Centric Operations will enable a precise, agile style of maneuver warfare that can sustain of decisively influence events ashore anytime, anywhere. Both the power and survivability of the future force will be significantly enhanced through networking of warfighters where aggregate warfighting value is far greater than the sum of the individual forces. Network Centric Operations primarily focus the operational and tactical levels of warfare, but have significant impact on the levels of military activity in conflict resolution from the tactical to the strategic." (NWDC, 2001)

Within Network Centric Operations there are four major pillars: 1) Gaining the Information and Knowledge Advantage, 2) Assured Access, 3) Effects-Based Operations (EBO) and 4) Forward Sea-Based Forces. Knowledge superiority is a vital part of military operations. Sun Tzu, Jomini, and Clausewitz all praise the importance of information on the environment and the enemy. It is an essential ingredient for success in battle. This information and knowledge is acquired from a variety of sources such as remote sensors, operator education in the culture and history of the enemy, and information networks. Since the network is the "glue" that combines the forces, assured assess and network survival is essential for conducting network centric operations. The payoff is that a navy with such a capability could plan, coordinate, direct, and conduct forward deployed sea-based operations using a variety of weapons that may or may not be resident with the battle group. These operations might be very sophisticated and aimed at creating effects that cause an enemy's center of gravity to crumble (i.e. effects-based operations).

When air and land bases in the vicinity of the crisis are not available to conduct military operations, a sea based military force may be the only options until such bases are established. As a result, ships must be fully equipped to provide the embarked commander with full situational awareness of the battlespace as well the ability to communicate with participating units, share Commander's Intent, and coordinate actions.

ENTERPRISE BATTLE GROUP'S EXPERIENCE

The Enterprise Battle Group experience during the 1998-1999 deployment was documented in *Proceedings* (Dawson, 1999). Enterprise Battle Group was one first deploying battlegroup with the IT-21 upgrade installed on all deploying ships. All ships could send e-mail, some ships had satellite telephone connectivity and Internet browsing, and *Enterprise* could participate in video teleconferences. The access of SIPRNET (the classified military version of Internet) and NIPRNET (the unclassified Internet) allowed ships to browse to web sites anywhere in the world to receive information on supply shipments, personnel information, intelligence, and news. The increased level of connectivity allowed ships to share documents (usually Word, Exel, and Powerpoint files) and begin to collaborate more freely than had ever existed in the past with ships underway. These systems allowed the ships to interact with shore bases and ships alike as if they were functional "next door". Documents and ideas could freely move between players without excessive supervision.

Enterprise Battle Group participated in Operations Allied Force, the air strikes into Kosovo, and Operation Southern Watch in the North Arabian Gulf simultaneously. IT-21 technology allowed the Destroyer Squadron Commander embarked onboard *Nicholson* to conduct Tomahawk missile strikes into Kosovo, while *Enterprise* was engaged in air operations in the North Arabian Gulf. In both cases, the at sea commander had the connectivity to effectively coordinate operations, acquire Commander's Intent from shore based commanders, and effectively operate their OODA Loops to meet the mission requirements.

This experience also introduced new concepts in to battle group support and status reporting. For the first time e-mail and chatrooms could be used to troubleshoot equipment and save valuable time in providing assistance during urgent repairs. Battle Groups status could now be reported in a Battle Group SIRPRNET web site. The information could be updated at frequent intervals and provide viewers with photographs, video clips, documents, presentations, and "the latest news update".

The Enterprise Battle Group experience also revealed that there lacked sufficient shipboard expertise to manage, repair, and maintain the new systems. Also observed were the instant rise in E-mail usage onboard by sailors. E-mail was the communication source of choice over letters. E-mail usage also grew during the deployment as people began to rely on this communication form to conduct daily business.

The author participated in the Theodore Roosevelt Battle Group Deployment of 1999. Only two ships of that Battlegroup, *Ross* and *Theodore Roosevelt* were IT-21 capable. Coordination between the at sea and shore based commanders remained intact (the Destroyer Squadron Commander was embarked on *Ross*), but coordination between ships was limited to the pre IT-21 technology. The entire Battlegroup was engaged in Operation Allied Force. Successful communication of Commander's Intent was conducted via message traffic, secure voice radio, and personal meetings. Although effective, more effort was expended and time consumed to achieve the same results that could have been accomplished via E-mail, phone calls, or video teleconferences. The largest impact to the battle group operations was the improved support provided from *Theodore Roosevelt* to its Battlegroup ships due its IT-21 connectivity to shore based supplies, technical support, and transport.

During the 2001 Enterprise Battle Group deployment, CDR John Bruns, Information Warfare Commander and N6 for the Battle Group

Commander, reported an updated status on the level of maturity and evolution of the carrier battle group command and control, communications, computer, and information systems (C4I). His experience highlights another level of integration and collaboration between battlegroup units, shore bases, and joint military forces. The new current generation of deployed naval forces now extensively communicate with E-mail and chatrooms. At least 18 separate chatrooms were used in tactical, information, and logistic support. Continuous connectivity via video teleconferencing was mandatory during actual operations. Message traffic usage for sharing information amongst the Battle Group was significantly reduced, and almost entirely replaced by SIPRNET web pages.

On September 11, the attack on the World Trade Center and the Pentagon occurred. Operation Enduring Freedom was about to commence. Enterprise Battle Group was quickly deployed to the North Arabian Sea and commenced strike operations into Afghanistan. The strike operations and use of special forces required a C4I system that could handle fast reaction targeting, connectivity amongst all sea, air, and land participants, collaborative decision-making, and delivery of Commander's Intent.

Proceedings (December 2001) described the possible use of a Hunter Network to target members of the Taliban and al Qaeda (Moore, 2001). Such a network would require high-speed connectivity between land, sea, and air forces. Land forces would gather intelligence and select targets while sea and air forces would destroy them. Since all participants are connected, fast responding and evolving OODA Loops were created.

CONCLUSION

IT-21 and Network Centric Operations have already become a valuable part of military operations. This is a new capability, but based on old principles of communications, information, and coordination. A basic study of strategy and tactics with the assistance of current military doctrinal and vision publications provide a basic understanding of the warfighters mindset.

This information and knowledge may be used as a conceptual tool to help analyze the future growth of shipboard information systems. Ships must be as connected as their land counterparts. During the initial phases of an operation, ships at sea also provide a secure, protected environment until land and air bases in the region are acquired.

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ACKNOWLEDGEMENTS

This work was inspired by the efforts and experience of the men and women who served on the U.S. Navy's Carrier Battle Groups while in harms way, in particular those of the Enterprise and Theodore Roosevelt Battle Groups.

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